

What is claimed is:

1. A surgical rod curving apparatus comprising:
a first component for applying a first force to a surgical rod, wherein said first component includes a first element wherein said first element applies the first force transversely to a lengthwise direction of the rod, and applies the first force substantially
5 continuously along a length of the rod, when said first element traverses the length of the rod;
second and third elements for applying respective counter forces during the application of the first force, wherein when said first element traverses the length of the rod, each of said second and third elements traverse a corresponding length of the rod and
10 apply their respective counter force substantially continuously their corresponding length of the rod;
wherein at least one of said first, second and third elements includes a polyetherimide or composite thereof;
wherein said first force and said counter forces induce a curve in the rod when
15 said first element traverses the length;
wherein when the rod is curved, the rod is implanted in a patient.
2. The surgical rod curving apparatus of Claim 1, wherein each of said first, second and third elements revolve when the rod is moved relative to said first element.
3. The surgical rod curving apparatus of Claim 2, wherein each of said first, second and third elements contact the rod when revolving.
4. The surgical rod curving apparatus of Claim 1, wherein
at least one of said first, second and third elements includes a roller with a channel for
mating with a contour of the rod.

5. The surgical rod curving apparatus of Claim 1, wherein said first element contacts the rod between rod contacts by said second and third elements.

6. The surgical rod curving apparatus of Claim 5, wherein said first element contacts the rod substantially midway between where said second and third elements contact the rod.

7. The surgical rod curving apparatus of Claim 1, wherein said apparatus can be transported manually by one person.

8. The surgical rod curving apparatus of Claim 1, wherein said first force is applied substantially laterally relative to the length of the rod.

9. The surgical rod curving apparatus of Claim 1, wherein the curved surgical rod is for reducing a severity of a spinal abnormality.

10. The surgical rod curving apparatus of Claim 1, wherein said first component includes a shaft having an adjuster at one end of the shaft for moving an opposite end of the shaft relative to the rod.

11. The surgical rod curving apparatus of Claim 10, wherein said shaft is for transmitting the first force to said first element, and wherein said shaft includes a groove for mating with a slot of a shaft connector for moving said first element substantially synchronously said shaft both toward and away from the rod.

12. The surgical rod curving apparatus of Claim 10, wherein said adjuster includes a rotatable knob for rotating the shaft.

13. The surgical rod curving apparatus of Claim 10, wherein said adjuster includes an adjustment arm that extends outwardly from the shaft thereby providing a

user with additional leverage for rotating the shaft, wherein said arm can be provided in a plurality of operable orientations relative to an orientation of the shaft.

14. The surgical rod curving apparatus of Claim 10, wherein said opposite end of the shaft movably contacts a subassembly having a first axle about which at least a portion of said first element rotates.

15. The surgical rod curving apparatus of Claim 14, wherein said subassembly includes at least two gears for performing a gear reduction between a rotation of a second axle and a rotation of the first axle.

16. The surgical rod curving apparatus of Claim 1, wherein said second and third elements are spaced apart by a distance of 3 to 4 inches.

17. The surgical rod curving apparatus of Claim 1, wherein said first component includes a crank for urging said first element to traverse the length of the rod.

18. The surgical rod curving apparatus as in Claim 1, further comprising at least one roller included in each of the first, second and third elements, each said roller contacting the surgical rod.

19. A surgical rod curving apparatus, comprising:
a force providing assembly for applying a first force to a rigid surgical rod,
wherein said first force is applied substantially laterally to a lengthwise direction of the surgical rod by a first rod contacting portion of said force providing assembly;

5 second and third rod contacting portions for applying respective counter forces to the first force;

wherein at least one of said first, second and third rod contacting portions includes a plastic having, under operable conditions, at least most of the following characteristics (a) through (c):

- 10 (a) a tensile strength of at least 15,000 psi;
(b) an elasticity of at least 420,000 psi;
(c) a deflection temperature of at least 390 psi;
(d) coefficient of friction of between 0.43 and 0.45;
(e) a Rockwell Hardness of at least 100 "M" Scale units;
15 (f) an elasticity of at least 420,000 psi;
(g) a flexural strength of at least 12,000 psi; and
(h) a compressive strength of at least 19,000 psi;

a rod moving mechanism for moving the surgical rod relative to one or more of said force providing assembly, said second rod contacting portion and said third rod
20 contacting portion, wherein the first force is applied substantially continuously to the surgical rod during the moving of the surgical rod;

wherein said first force and said counter forces induce a curve in the rod during the moving of the rod;

wherein after the rod is curved, it is implanted in a patient.

20. The surgical rod curving apparatus of Claim 19, further including a base that supports said force providing assembly, and said first and second contacting portions, wherein said base supports said apparatus on a surface in a surgical operating room.

21. The surgical rod curving apparatus of Claim 19, wherein said force providing assembly and said rod moving mechanism include a common component, said common component including a roller for applying said first force to the rod, and for providing the moving of the rod.

22. A method of curving a rigid surgical rod, comprising:
positioning the rigid surgical rod between opposing first and second rod contacting portions, wherein the first and second rod contacting portions are held in place by a single housing, and at least one of said first and second rod contacting portions
5 includes a rotatable portion for rotatably contacting the rod, said rotatable portion

including a polyetherimide or composite thereof;

moving the rod along its longitudinal extent while substantially continuously exerting a substantially lateral force on the rod by at least one of said first and second rod contacting portions;

10 applying an angular force to a handle connected to the rod for obtaining one or more desired angular orientations of the surgical rod about its longitudinal extent while said moving step is performed.

23. The method of Claim 22, wherein said first rod contacting portion includes at least one roller, and said second rod contacting portion includes at least two rollers.

24. The method of Claim 23, wherein said two rollers of said second portion are spaced apart, and said at least one roller of the first portion contacts the rod between rod contacts by said two rollers.

25. The method of Claim 22, wherein said contacting elements have a channel that mates with a contour of the rod so that a surface of the rod is not blemished.

26. The method of Claim 22, wherein said positioning step includes attaching said handle to the surgical rod, wherein said handle provides a visual indicator of an angular orientation of the surgical rod about its longitudinal extent;

27. The method of Claim 22, further including repeatedly interleaving a performing of said steps of moving and exerting, wherein for each of the repeated steps of exerting, another substantially lateral force is applied to the rod.

28. The method of Claim 27, wherein at least most of the substantially lateral forces are not sufficient to introduce a permanent deformation of the rod prior to a next performance of said step of moving.

29. The method of Claim 27, wherein at least one performance of said step of exerting includes turning an adjuster for increasing a corresponding one of the substantially lateral forces.

30. The method of Claim 22, wherein said step of moving includes revolving a crank for moving the first rod contacting portion along the longitudinal extent of the rod.

31. The method of Claim 30, wherein said moving step includes reducing a gear ratio between said crank and said first rod contacting portion.